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09/625,993 07/26/00 HIGASHINO

K Q60072

EXAMINER

GONZALEZ, J

ART UNIT

PAPER NUMBER

2834

DATE MAILED: 1/04/01

MM91/0104
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WASHINGTON DC 20037

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/625,993

Applicant(s)

HIGASHINO ET AL.

Examiner

Julio C. Gonzalez

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claims ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 July 2000 is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 1.
- 18) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: _____

DETAILED ACTION

Specification

- ✓1. The disclosure is objected to because in page 3, applicant stated that in the prior art the "stator core has 72 slots, which is a lot, there is a problem in that the insertion time and installation characteristics of the stator coils". Now in the abstract/claims, the applicants stated that the new invention has 72 or more slots. According to applicant's statement, the new invention will also encounter the same problem as the prior art, if not worse. Also, the applicant stated in page 3 that the "present invention is to provide a stator for an automotive alternator which has good stator coil installation characteristics". Please explain in more detail HOW the stator coil installation characteristics are better than the prior art. Correction is required.

Also, the disclosure is objected to because in page 6 applicant refers to the term

- ✓ "SPCC". Complete spelling of the acronym is necessary. Correction is required.

Art Unit: 2834

Drawings

- ✓ 2. Figures 8-11 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).
- ✓ 3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "23" has been used to designate both "stator winding" and "stator coils". Correction is required.
- Reference character "124a" has been used to designate "thin projections" and "short projections" and "projections". Correction is required.
- Reference character "224" has been used to designate "stator core" and "wide tooth" and "adjacent teeth". Correction is required.
- ✓ 4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: "slot 225", "slot opening portion 227", "magnetic poles 19 and 20".
- Correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:
- The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Art Unit: 2834

6. Claims 1-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicant needs to explain how the "stator coils become an inner side thereof and both end surfaces thereof are contacted to connect said stator core". Does the statement means that the inner side is in contact with the stator core and that the inner side has more than one end surface which are also in contact with the stator core? Please point this out in the drawings. It would be helpful in the understanding of the claim. In reference to claim 6, applicant needs to explain the term "on tips said teeth", "mutual interval" and "projecting lengths of said projections".

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Kusase et al.

Kusase et al discloses for the purpose to make a stator for an automotive alternator comprising a stator 20 , a stator core 12 in which a plurality of slots (see figure 3) extending in axial directions are formed at an inner circumference thereof and two sets of three phase stator coils 31-36 which are fitted into said slots; and a rotor 10 provided inside the stator 20 so as to be capable of rotating, comprising, a rotor coil 14

Art Unit: 2834

for flowing a current to generate magnetic flux, and a pole core for housing the rotor coil and forming a plurality of claw-shaped magnetic poles in accordance with magnetic flux (see figure 3) (column 4, lines 60-70), and 2 slots are provided for each phase of said stator coils 31-36 and each magnetic pole and the total number of the slots is 72 or more, said stator core is such that a plurality of sheet-shaped magnetic members with a plurality of teeth patterning said slots at one side of a yoke are laminated, said stator coils 31-36 are disposed in said slots, and said stator core 12 is rounded such that said stator coils 31-36 become an inner side thereof and both end surfaces thereof are contacted to connect said stator core 12 in an annular shape.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 2-5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kusase et al in view of Hendershot.

Kusase et al discloses for the purpose to make a stator for an automotive alternator comprising a stator 20, a stator core 12 in which a plurality of slots (see figure 3) extending in axial directions are formed at an inner circumference thereof and two sets of three phase stator coils 31-36 which are fitted into said slots; and a rotor 10 provided inside the stator 20 so as to be capable of rotating, comprising, a rotor coil 14

Art Unit: 2834

for flowing a current to generate magnetic flux, and a pole core for housing the rotor coil and forming a plurality of claw-shaped magnetic poles in accordance with magnetic flux (see figure 3) (column 4, lines 60-70), and 2 slots are provided for each phase of said stator coils 31-36 and each magnetic pole and the total number of the slots is 72 or more, said stator core is such that a plurality of sheet-shaped magnetic members with a plurality of teeth patterning said slots at one side of a yoke are laminated, said stator coils 31-36 are disposed in said slots, and said stator core 12 is rounded such that said stator coils 31-36 become an inner side thereof and both end surfaces thereof are contacted to connect said stator core 12 in an annular shape. However Kusase et al does not disclose that the slot opening portions are uneven and the angle of the slot opening portions to be different.

On the other hand, Hendershot discloses that there is a circumferential direction between the center of the air gaps of the uneven slot (see figure 4a). Also, Hendershot discloses that the interval of slot opening portions to be between 24 degrees and 36 degrees. Moreover, Hendershot discloses the slot opening angles to be between 38 degrees and 51 degrees (column 14, Table I) which are very close to the angles disclose by the applicant.

It would have been obvious to one having ordinary skill in the art to design a stator with a stator core, plurality of slots, a rotor, and two sets of three-phase stator coil as disclose by Kusase et al and to make a circumferential direction between the center of the air gaps of the even slot and to make the slot opening angles between 24 degrees and 36 degrees and 31 degrees and 38 degrees as disclose by Hendershot.

11. Claims 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kusase et al in view of Herdeshot and Burgbacher et al.

Kusase et al discloses for the purpose to make a stator for an automotive alternator comprising a stator 20 , a stator core 12 in which a plurality of slots (see figure 3) extending in axial directions are formed at an inner circumference thereof and two sets of three phase stator coils 31-36 which are fitted into said slots; and a rotor 10 provided inside the stator 20 so as to be capable of rotating, comprising, a rotor coil 14 for flowing a current to generate magnetic flux, and a pole core for housing the rotor coil and forming a plurality of claw-shaped magnetic poles in accordance with magnetic flux (see figure 3) (column 4, lines 60-70), and 2 slots are provided for each phase of said stator coils 31-36 and each magnetic pole and the total number of the slots is 72 or more, said stator core is such that a plurality of sheet-shaped magnetic members with a plurality of teeth patterning said slots at one side of a yoke are laminated, said stator coils 31-36 are disposed in said slots, and said stator core 12 is rounded such that said stator coils 31-36 become an inner side thereof and both end surfaces thereof are contacted to connect said stator core 12 in an annular shape. However Kusase et al does not disclose that the slot opening portions are uneven and the angle of the slot opening portions to be different.

On the other hand, Hendershot discloses that there is a circumferential direction between the center of the air gaps of the uneven slot (see figure 4a). Also, Hendershot discloses that the interval of slot opening portions to be between 24 degrees and 36

Art Unit: 2834

degrees. Moreover, Hendershot discloses the slot opening angles to be between 38 degrees and 51 degrees (column 14, Table I) which are very close to the angles disclose by the applicant. However Hendershot does not disclose that the slot opening portions to be changed by varying the projection of the teeth and that the contact surfaces of the stator core connected as an annular-shape are formed by dividing a wide tooth in a circumferential direction.

On the other hand, Burgbacher et al. discloses that slot opening can be changed by varying the projecting length of the teeth (see figure 10) and that the contact surface of the stator core connected as an annular-shape are formed by dividing a wide tooth in a circumferential direction (see figure 10).

It would have been obvious to one having ordinary skill in the art to design a stator with a stator core, plurality of slots, a rotor, and two sets of three-phase stator coil as disclose by Kusase et al and to make a circumferential direction between the center of the air gaps of the even slot and to make the slot opening angles between 24 degrees and 36 degrees and 31 degrees and 38 degrees as disclose by Hendershot and to make the slot opening different by varying the length of the teeth and to make a contact surface by dividing wide teeth in a circumferential direction as disclose by Burgbacher et al.

12. In regard to claim 8, the method of forming the device is not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julio C. Gonzalez whose telephone number is (703) 305-1563. The examiner can normally be reached on M-F (8AM-5PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703) 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-1341 for regular communications and (703) 305-1341 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.


NESTOR RAMIREZ
SUPERVISORY PATENT EXAMINER
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Jcg

December 28, 2000